

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

ROBERT "BOB" BURNS, CHAIRMAN
BOYD DUNN
SANDRA D. KENNEDY
JUSTIN OLSON
LEA MÁRQUEZ PETERSON

IN THE MATTER OF THE APPLICATION OF
TUCSON ELECTRIC POWER COMPANY FOR
THE ESTABLISHMENT OF JUST AND
REASONABLE RATES AND CHARGES
DESIGNED TO REALIZE A REASONABLE
RATE OF RETURN ON THE FAIR VALUE OF
THE PROPERTIES OF TUCSON ELECTRIC
POWER COMPANY DEVOTED TO ITS
OPERATIONS THROUGHOUT THE STATE OF
ARIZONA AND FOR RELATED APPROVALS.

Docket No. E-01933A-19-0028

Direct Testimony of

Nicole Horseherder

on behalf of

The San Juan Citizens Alliance, the Black Mesa Water Coalition, Diné CARE,
and Tó Nizhóní Ání ("Citizen Groups")

October 11, 2019

Direct Testimony of Nicole Horseherder, Citizen Groups

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I. Introduction

Q. Please state your name and business address.

A. My name is Nicole Horseherder. I am the Executive Director of Tó Nizhóní Ání. My business address is P.O. Box 483, Kykotsmovi, Arizona 86039.

Q. What are your professional qualifications?

A. I am the Executive Director and one of the founders of Tó Nizhóní Ání, which was established in 2000. Prior to this role, I served on the Water Rights Negotiating Team for the Navajo Nation. I am a fluent speaker of Diné (Navajo), have spent close to 20 years translating federal regulations and other technical data for local Navajo citizens, and served 11 years as the Federal Programs Director for the Piñon Unified School District. I have a B.A. in Family and Consumer Resources from the Department of Agriculture at the University of Arizona and an M.A. in Linguistics from the University of British Columbia, Vancouver. Please reference my resume, which is included as Attachment 1.

Q. For whom are you testifying?

A. I am testifying on behalf of the San Juan Citizens Alliance, the Black Mesa Water Coalition, Diné CARE, and Tó Nizhóní Ání — collectively, the “Citizen Groups.”

Q. Please describe the four organizations that comprise the Citizen Groups.

The San Juan Citizens Alliance (SJCA) is a community-based nonprofit membership organization with over 500 members in the Four Corners region. SJCA works to protect clean air, pure water and healthy lands across the San Juan Basin in northwestern New Mexico and southwestern Colorado. The organization's energy program is focused on cleaning up decades of impacts related to fossil fuel development and use in the region and transitioning to a just, clean energy future.

Black Mesa Water Coalition (BMWC) was established in 2001 as a Navajo grassroots community organization dedicated to preserving and protecting Mother Earth and the integrity of indigenous cultures by addressing issues such as water depletion, natural resource exploitation and improvement of the health of Navajo and Hopi communities. BMWC's mission is to help build sustainable and healthy communities. The organization's work is grounded in traditional teachings of respect for and protection of Mother Earth and encompasses three

main program areas: ending tribal reliance on fossil fuels, building a green economy, and leadership development.

Tó Nizhóní Ání (TNA) is a Navajo grassroots community organization established to preserve and protect the environment, land, water, sky and people and to advocate for the wise and responsible use of the natural resources in the Black Mesa region and throughout the Navajo Nation. Through its work, TNA educates and brings awareness to local Navajo communities and to Navajo Nation leadership in Window Rock on issues that include energy and resource development. TNA aims to help move the Tribe to a more sustainable economy that is not dependent on coal.

Diné CARE is an indigenous community organization based within the Navajo homeland, with staff in both Arizona and New Mexico. It strives to educate and advocate for traditional Diné teachings as a means of protecting and providing a voice for all life living among the Four Sacred Mountains. Diné CARE promotes alternative uses of natural resources that are consistent with the Diné philosophy, and it assists local and traditional communities to organize, speak out, and determine their own destinies.

Q. How are the Citizen Groups connected to the Four Corners Power Plant (FCPP), the San Juan Generating Station (SJGS) and the Navajo Generating Station (NGS)?

- A. The Citizen Groups have members who are directly impacted by the operations of FCPP, SJGS and NGS. They monitor and scrutinize government and utility actions related to all three power plants in order to ensure that impacts to local and tribal communities are evaluated and considered as part of decision-making processes that impact the plants, their operations, and their closures.

Additionally, members of the BMWC, Diné CARE and TNA each have Tribal members who are directly impacted by the operations of NGS and the coal-mining complex on Black Mesa (also located on the Navajo Nation) that supplies the plant with coal and who will be directly impacted by the plant's closure.

Q. Are any other witnesses testifying on behalf of the Citizen Groups?

- A. Yes. Michael Eisenfeld, the Energy and Climate Program Manager of the San Juan Citizens Alliance, is also testifying on behalf of the Citizen Groups.

Q. What is the purpose of Mr. Eisenfeld's testimony?

A. Mr. Eisenfeld's testimony will:

1. Discuss the environmental and public health impacts of FCPP and SJGS on the local communities of the Four Corners region.
2. Explain why FCPP will likely retire much sooner than 2038.
3. Explain what is meant by a "just transition" for communities economically dependent on coal.
4. Explain why TEP bears some responsibility for a just transition of NGS, FCPP and SJGS.
5. Describe what a just transition of NGS, FCPP and SJGS would look like for local and Tribal communities.
6. Explain why planning and implementation for a just transition must begin immediately. And,
7. Detail the Citizen Groups' five recommendations that should be implemented as part of this proceeding to ensure a just transition for NGS, FCPP and SJGS.

Q. Do you support Mr. Eisenfeld's testimony?

A. Yes, I do.

Q. What is the context and purpose of your testimony?

A. TEP is part owner of three coal-burning power plants whose operations and retirements directly impact communities of concern to the Citizen Groups: FPCC and SJGS in the Four Corners region of northwestern New Mexico, and NGS in northern Arizona. Mr. Eisenfeld's testimony focuses on the environmental and economic impacts of TEP's power plants in New Mexico and the Citizen Groups' five recommendations for a just transition of all three plants. Tó Nizhóni Ání's work is most relevant to the Navajo Nation and to NGS. Therefore, in my testimony, I will:

1. Discuss the impact of NGS and surrounding coal complex on the local environment and public health.

2. Discuss the impact of FCPP, SJGS, and NGS on tribal jobs and the economy.
3. Support the immediate commencement of planning and implementation efforts for a just transition of local communities impacted by the imminent closures of SJGS and NGS and the eventual retirement of FCPP.
4. Explain how a just transition effort for tribal communities in both the Four Corners region and on the Navajo Nation in northern Arizona aligns with the Fundamental Law of the Diné. And,
5. Offer additional perspectives on the Citizen Groups' five recommendations that should be implemented as part of this proceeding.

II. The Impacts of NGS on the Environment and Public Health

Q. Please describe NGS and surrounding coal complex.

- A. NGS is the largest coal-burning power plant in the western United States. It is situated on about 1,800 acres of land leased from the Navajo Nation near Page, Arizona. The first of its three 803-MW (nameplate) units went online in 1974, the second in 1975 and the final unit in 1976. In addition to TEP, NGS is co-owned by three other utilities: Salt River Project (43%), Arizona Public Service (14%) and NV Energy (11%), providing electricity to their customers in Arizona and Nevada. The U.S. Bureau of Reclamation also has an ownership stake in NGS (24%), with its share of the plant's output used to power Central Arizona Project pumps that move about 1.5 million acre-feet per year (AFY) of water from the Colorado River to central and southern parts of the state for residential, agricultural and industrial uses.

NGS is one of the largest sources of pollution in the Southwest. Over the plant's nearly five decades of operation, the three 800-MW units have burned a thousand tons of coal per hour to generate electricity that is delivered to customers in California, Arizona, and Nevada. Since coming online, it has pumped more than a half billion tons of carbon dioxide into the atmosphere and released millions of tons of additional harmful pollutants into the surrounding air every year.¹

Under provisions of the Colorado River Compact, the power plant is authorized to use up to 34,100 acre-feet per year (AFY) from the 50,000 AFY allocated for

¹ Comments on the Draft Environmental Impact Statement for the NGS-Kayenta Mine Complex.
Submitted by Grand Canyon Trust, Center for Biological Diversity and Sierra Club. Dec. 29, 2016.

use in Arizona's portion of the Upper Colorado River Basin,² comprised almost entirely of Navajo Nation lands. Under the 1968 Navajo Council Resolution that approved the use of this water for NGS operations, once the plant retires and the agreement's provisions are no longer in effect, rights to the use and control of NGS water must be "returned to the Navajo Tribe for their exclusive use and benefit."³

Historically, at full-scale operation, NGS burned around 8 million tons of coal per year, all of which was supplied by Peabody Energy's Kayenta Coal Mine on Black Mesa, situated on Navajo land about 90 miles east of the power plant in northeastern Arizona. Kayenta Mine covers approximately 44,000 acres (69 square miles). In 2018, the three NGS units burned 6.4 million tons of coal supplied by the mine.⁴ Operations at Kayenta Mine consume approximately 1,250 AFY of groundwater from the N-Aquifer, the sole source of drinking water on Black Mesa.⁵

Q. Does TEP own a share of NGS?

- A. Yes, TEP has owned a 7.5% stake (168 megawatts)⁶ of the 2,250-MW (net capacity) NGS plant since it opened.⁷

Q. Has a closure date for NGS been announced?

- A. Yes, in February 2017, the five owners of NGS agreed on a plan to retire the power plant,⁸ then subsequently negotiated an extension lease with the Navajo Nation to allow the plant to operate until December 2019.⁹ The power plant received its last trainload of coal from its coal supplier, Peabody Energy, on

² U.S. Bureau of Reclamation Contract No. 14-06-400-5033, January 1969, Article 7, page 6.
<https://docs.google.com/file/d/0BzAD-1g8I2r1N2M5M2FhMDYtMDI0Ny00MzFjLWlyODgtZjRiYzEyODMzM2Qz/edit?hl=en>

³ Navajo Council Legislation 108-68, Paragraph 6, p. 4.
<https://books.google.com/books?id=mTATAAAIAAJ&pg=PA48&lpg=PA48&dq=navajo+Resolution+CD-103-68&source=bl&ots=P59iCJYEm&sig=ACfU3U3locAoxN7YeNrmpXySGCxf0zbHQ&hl=en&sa=X&ved=2ahUKewiJuMftjYnlAhXQvJ4KHRxtDFEQ6AEwAHOECAoQAQ#v=onepage&q=navajo%20Resolution%20CD-103-68&f=false>

⁴ U.S. Energy Information Administration, Form-923. <https://www.eia.gov/electricity/data/eia923/>

⁵ U.S. Office of Surface Mining, Reclamation and Enforcement, Kayenta Mine Permit Renewal, 2015.
https://www.wrcc.osmre.gov/initiatives/kayentaMine/2015Renewal/Kayenta_Mine_Enivonmental_Assessment.pdf

⁶ TEP 2019 Preliminary Integrated Resource Plan (page 10).
<https://www.tep.com/wp-content/uploads/2019/07/TEP-Preliminary-Integrated-Resource-Plan-070119-FINAL-Version-2.pdf>

⁷ <https://www.tep.com/about/history/>

⁸ SRP News Release. Feb. 13, 2017.
https://www.srpnet.com/newsroom/releases/021317.aspx?TB_iframe=true&width=921.6&height=921.6

⁹ Final NGS Extension Lease between the Navajo Nation and NGS owners.
<https://www.usbr.gov/lc/phoenix/reports/NGS/EAFONSI/ExtLeaseNAVSRP.pdf>

August 26, 2019.¹⁰ The first of the three units at NGS shut down on September 19, 2019,¹¹ and according to plant operator Salt River Project, the remaining two units are scheduled to be taken offline by mid-November.¹²

Q. Please describe the public health impacts on local communities of NGS and the coal complex operations on Black Mesa.

- A. There is substantial anecdotal evidence that decades of exposure to emissions from NGS has detrimentally impacted the health of people of the Navajo Nation, leading to increased incidence of asthma and pulmonary problems, heart disease and cancer. Unfortunately there is scant quantitative evidence to back that up, as neither the owners of NGS nor federal and state health officials have bothered to invest in comprehensive health studies of impacted Navajo communities, preferring instead to deem the lack of data as evidence that there are no health problems associated with the significant amounts of pollution emitted by NGS.

Health workers often relay reports of clusters of illnesses such cancer in communities downwind from the power plant. For example, NBC News recently observed that, “A nonsmoker recently came down with lung cancer, another contracted pancreatic cancer and a couple others report malignant growths in their stomachs.”¹³ Yet, no authoritative long-term epidemiological study of the impacts of the power plant’s emissions has ever been undertaken.

A summary study completed in 2013 found that across the entire Navajo reservation, rates for some cancers, including lung cancer, were substantially lower among Navajos than among whites in New Mexico and Arizona. But the same report also showed that the Navajo suffered substantially higher rates of stomach, liver and kidney cancers.¹⁴ Another study, comparing causes of death on the New Mexico side of the Navajo Nation against the statewide rates, found higher mortality rates from a number of cancers but lower rates caused by lung cancer and other pulmonary problems.¹⁵

¹⁰ Arizona Republic, Aug. 26, 2019.

<https://www.azcentral.com/story/money/business/energy/2019/08/26/navajo-generating-station-receive-s-last-trainload-coal-mine-kayenta/2089822001/>

¹¹ NGS Plant Manager Joe Frazier, Navajo Hopi Observer column, Oct. 1, 2019.

<https://www.nhonline.com/news/2019/oct/01/column-decommissioning-navajo-generating-station-p/>

¹² Ibid.

¹³ NBC News. Lighting the West, Dividing a Tribe. Dec. 18, 2018.

<https://www.nbcnews.com/specials/navajo-coal>

¹⁴ Report: Cancer Among the Navajo: 2005-2013.

<https://www.nec.navajo-nsn.gov/Portals/0/Reports/Cancer%20Among%20Navajo%202018%20Spread.pdf>

¹⁵ Report: Navajo Mortality 2010-2013, New Mexico Portion of the Navajo Nation.

https://www.nec.navajo-nsn.gov/Portals/0/Reports/Navajo%20Mortality%20NM%20Portion%202010-2013_opt.pdf. At Page 66.

Other studies, however, indicate that air quality problems are indeed resulting in health issues for Navajo populations. Estimates say asthma rates are two to three times higher on the Navajo Nation than in the general population.¹⁶ A University of Utah medical researcher found high prevalence of asthma in children living in Chinle Agency, about 150 miles east of NGS. The study documented nearly 3,000 cases of children diagnosed with asthma in 2017, but also concluded that wood-burning stoves were a contributing factor.¹⁷

A medical journal report in 2018 found that “Navajo children living on the reservation have high rates of asthma prevalence and severity.”¹⁸ The integrative literature review concluded that “both indoor and outdoor environmental risk factors commonly found on the Navajo reservation appear to be important determinants of asthma,” but also noted that “environmental influences ... are inadequately understood.” It recommended future additional research examining both indoor and outdoor air pollution, including specifically from coal combustion.

According to an analysis conducted by the Clean Air Task Force in 2018, the pollution from NGS annually results in an estimated 26 deaths, 15 heart attacks, 184 asthma attacks, 16 hospital admissions or emergency room visits, 6 cases of chronic bronchitis, and 1,345 lost days of work.¹⁹

Q. Please describe the air pollution emitted by the operations of NGS.

A. NGS has historically been one of the largest sources of air pollution in the Southwestern United States. In 2018, the plant’s three units emitted more than 3,500 tons of acid-rain causing sulfur dioxide (SO₂), more than 12,000 tons of nitrous oxides (NO_x), which contribute to harmful ozone pollution and haze, and more than 14 million tons of carbon dioxide (CO₂), one of the main pollutants causing climate disruptions. Even after the installation of pollution controls to decrease SO₂ and NO_x emissions, NGS remains one of the largest point sources of those criteria pollutants in the state.

The United States Environmental Protection Agency (EPA)’s data also documents other hazardous chemicals released by the plant, including arsenic,

¹⁶ National Jewish Health. “\$8.5M Grant Awarded to Improve Asthma Care with the Navajo Nation.” Nov. 14, 2017
<https://www.nationaljewish.org/about/news/press-releases/2017/grant-awarded-to-improve-asthma-care-with-the-navajo-nation>

¹⁷ Asthma on the Navajo Reservation and Beyond.
<https://health.utah.gov/asthma/pdfs/telehealth/Navajo.pdf>

¹⁸ Environmental Concerns for Children with Asthma on the Navajo Nation. Annals of the American Thoracic Society, June 2018. <https://www.atsjournals.org/doi/full/10.1513/AnnalsATS.201803-220ED>

¹⁹ Data reflects health effects based on 2016 emissions. http://www.catf.us/fossil/problems/power_plants/

mercury, and chromium. Data from the 2014 National Emissions Inventory for NGS are summarized below.²⁰

Company_Name	Salt River Project		
Site_Name	NAVAJO GENERATING STATION		
NAICS_Code	221112		
Facility_Type	Electricity Generation via Combustion		
Acetaldehyde	4,891	Pounds	
Arsenic	455	Pounds	
Benzene	11,172	Pounds	
Chromium (VI)	103	Pounds	
Manganese	1,823	Pounds	
Mercury	184	Pounds	
Nickel	4,945	Pounds	
Particulates - PM10	4,108	Tons	
Particulates - PM2.5	2,833	Tons	

Q. Please describe the water pollution issues resulting from the operations of NGS.

A. In addition to the hazardous chemicals emitted by the smokestacks at NGS, the facility also generates significant amounts of hazardous materials that are disposed of on-site, mainly in the millions of tons of coal-ash waste generated by the plant.

According to the EPA's Toxics Release Inventory, releases on site in 2017 of hazardous chemicals, including carcinogens, totaled 2.4 million pounds, as detailed in the chart below.²¹

²⁰ U.S. Environmental Protection Agency. 2014 National Emissions Inventory Data.
<https://www.epa.gov/air-emissions-inventories/2014-national-emissions-inventory-nei-data>

²¹ U.S. Environmental Protection Agency. Toxics Release Inventory Explorer.
https://enviro.epa.gov/triexplorer/tri_release.chemical

SALT RIVER PROJECT NAVAJO GENERATING STATION, 5 MI E OF PAGE ON HWY 98, PAGE ARIZONA 86040 (COCONINO)	1,345,233
ARSENIC COMPOUNDS (2211 – Electric Utilities)	12,266
BARIUM COMPOUNDS (2211 – Electric Utilities)	990,451
BENZO(C,H,I)PERYLENE (2211 – Electric Utilities)	0
CHROMIUM COMPOUNDS(EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION) (2211 – Electric Utilities)	48,393
COBALT COMPOUNDS (2211 – Electric Utilities)	11,024
COPPER COMPOUNDS (2211 – Electric Utilities)	17,665
DIOXIN AND DIOXIN-LIKE COMPOUNDS (2211 – Electric Utilities)	**
HYDROCHLORIC ACID (1995 AND AFTER "ACID AEROSOLS" ONLY) (2211 – Electric Utilities)	9,847
HYDROGEN FLUORIDE (2211 – Electric Utilities)	13,853
LEAD COMPOUNDS (2211 – Electric Utilities)	18,466
MANGANESE COMPOUNDS (2211 – Electric Utilities)	107,404
MERCURY COMPOUNDS (2211 – Electric Utilities)	290
NAPHTHALENE (2211 – Electric Utilities)	38
NICKEL COMPOUNDS (2211 – Electric Utilities)	30,974
POLYCYCLIC AROMATIC COMPOUNDS (2211 – Electric Utilities)	7
SELENIUM COMPOUNDS (2211 – Electric Utilities)	9,727
SODIUM NITRITE (2211 – Electric Utilities)	15,984
SULFURIC ACID (1994 AND AFTER "ACID AEROSOLS" ONLY) (2211 – Electric Utilities)	11,580
VANADIUM COMPOUNDS (2211 – Electric Utilities)	23,884
ZINC COMPOUNDS (2211 – Electric Utilities)	23,380
Total	2,373,195

Groundwater pollution has been also documented at the NGS site. A geologic and hydrogeologic analysis conducted as part of the 2016 Environmental Impact Statement (EIS) for NGS²² concluded that there is measurable contamination at the plant site, mainly resulting from on-site disposal of coal-combustion waste. The analysis notes that:

“The NGS plant is located upon a geologic unit known as the Carmel Formation that did not contain groundwater prior to operation of the NGS plant. Unintentional leakage of industry-impacted water from this “zero liquid discharge” (ZLD) facility has formed a ‘new’ aquifer in the Carmel Formation,

²² Executive Summary. Evaluation and Professional Opinions Regarding Geologic and Hydrogeologic Aspects of the 2016 DEIS as it Pertains to Scheduled Facility (NGS) Closure. Prepared by Groundwater Management Associates Inc. June 2017.

and groundwater is now located as little as five (5) feet below the NGS plant... NGS is actively pumping wells tapping the Carmel Formation to remove contaminated groundwater that contains concentrations of heavy metals, sulfate, and total dissolved solids (TDS), and some of these concentrations exceed federal water-quality standards. For example, water pumped from one well in October of 2015 contained selenium, a toxic heavy metal, at a concentration almost four times (4x) the federal water-quality standard. Shallow groundwater is being pumped continuously from the Carmel Formation because it is a source of mobile contamination that can impact the quality of groundwater in the regionally important N Aquifer.... The full extents of the industry-produced groundwater in the Carmel Formation are not defined, despite the fact that this problem has existed since at least 1979."

The analysis also notes that there are contamination pathways, via geologic fractures, for the leaching coal-ash waste chemicals to migrate into the N-Aquifer, which is the sole drinking water supply for the Black Mesa region, adding that, "Fractured-rock aquifers are notoriously difficult to characterize, monitor and remediate once they become contaminated."²³

It also dismisses federal claims in the Draft EIS that the risk of leachate impacting the N-Aquifer is minimal because the coal ash is disposed in a "dry" form. Rather, the analysis points out, "NGS intentionally placed approximately 200 to 350 million gallons of 'plant process water' on the coal ash within the first decade of operation, and at least 70 million gallons of water falls on the coal ash every year as rain and snow,"²⁴ all making it far from a dry site.

Q. Please describe the impact on water levels and water availability resulting from the operations of NGS and Kayenta coal complex.

- A. As previously noted, NGS consumes up to 34,000 acre-feet of Colorado River water per year for pollution control and cooling – in a region where annual precipitation is less than 10 inches a year.²⁵

Groundwater use on Black Mesa for mining – both for the Kayenta coal mining complex and for the adjacent Black Mesa, which provided coal for the Mohave Generating Station 270 miles away in southern Nevada until its closure in 2005 – has had measurable effects on the N-Aquifer, the sole supply of drinking water on Black Mesa.

An assessment of the impacts of groundwater pumping on Black Mesa in 2006 determined that there were "signs of material damage to the aquifer," and also

²³ Ibid. At Page 2.

²⁴ Ibid. At Page 2.

²⁵ <https://www.timeanddate.com/weather/@5306240/climate>

that “the government’s failure to adequately monitor the damage can be attributed to a flawed modeling system that obscures on-site evidence of physical damage.”²⁶ A review of hydrological assessments used by Peabody and the federal government determined that total withdrawals at Kayenta Mine have exceeded the rate of natural recharge by approximately 21,000 to 53,000 acre-feet during the period analyzed.²⁷

The Black Mesa Mine, until its closure a decade and a half ago, was an egregious exploiter of N-Aquifer water. In one of the most nonsensical set-ups imaginable in such an arid region, the mine pumped more than 1 billion gallons of groundwater a year from the aquifer to mix with coal to create a slurry that was sent via pipeline to the Mohave plant in Nevada. Several years after the mine closed, water levels that had been drying out began to increase again, according to the U.S. Geological Survey.²⁸

II. The Impacts of NGS on Local Jobs and the Economy

Q. What is the importance of coal to the Navajo Nation?

- A. Coal has been an important economic driver for the Navajo Nation for the last half century. All three of the power plants referenced in the Citizen Groups testimony have been in operation for decades, bringing jobs and economic development to both tribal and non-tribal communities. FCPP was the first to come online in 1963, followed by SJGS in 1973 and then NGS in 1974. FCPP and NGS are both situated on Navajo land, which is leased by the owners from the Navajo Nation for plant operations. Their respective coal suppliers, Navajo Mine and Kayenta Mine, also sit on the Navajo Nation and provide the tribe with coal royalties. SJGS sits just outside of the Navajo Nation near FCPP and is thus still an important cog in the Navajo economy.

As of 2018, there were about 550 combined workers employed at SJGS and the San Juan Mine; about half of whom were Navajo.²⁹ At FCPP and the Navajo Mine, about 80% of the combined workforce of 800 employees was Navajo.³⁰ And of the 800 employees working at NGS and the Kayenta Mine in 2018, 83% were Navajo.³¹

²⁶ Drawdown: An Update on Groundwater Mining on Black Mesa. Natural Resources Defense Council Research Paper. March 2006. <https://www.nrdc.org/sites/default/files/draw.pdf>.

²⁷ Review of Peabody Western Coal Company’s (1984–2004) Determination of Probable Hydrologic Consequences for the Black Mesa-Kayenta Coal Mine. Dr. Daniel Higgins. June 2011.

²⁸ As reported by NBC News. <https://www.nbcnews.com/specials/navajo-coal>

²⁹ As reported in the Albuquerque Journal, “Coal’s decline in power production hits Navajo Nation hard.” August 20, 2018.

<https://www.abqjournal.com/1210759/coins-decline-in-power-production-hits-navajo-nation-hard.html>

³⁰ Ibid.

³¹ Ibid.

Annual wages and salaries of power plant employees are estimated to average approximately \$100,000 per employee, and around \$150,000 when health and retirement benefits are factored in.³²

Royalty payments from coal mining, lease payments from utilities and other taxes and fees all bring in substantial revenue for the Navajo Nation. According to then-Speaker of the Navajo Council, LoRenzo Bates, FCPP and NGS combined contribute about \$70 million of the Navajo government's \$220 million annual gross budget.³³

Q. Please describe the economic and local jobs impacts resulting from the closure of NGS and surrounding coal complex.

- A. The retirement of NGS and closure of the Kayenta Mine will have noticeable and severe effects on both tribal employment and revenue. Their closures will also, "Deprive the Navajo reservation of its two largest non-governmental employers," as noted in an NBC News report.³⁴

Both the Navajo and the Hopi have derived significant portions of their general fund budgets from coal for decades, relying on lease and royalty income and other taxes and fees for revenue that supports a variety of public services. Navajo Nation President Jonathan Nez and Vice President Myron Lizer acknowledged on social media the impacts that the closure of NGS and the Kayenta Mine will have on the Navajo government budget:

*"For the upcoming new fiscal year that begins on Oct. 1, the current revenue projection is approximately \$158 million, which is a \$14 million decrease from the current fiscal year budget of \$172 million. For fiscal year 2021, the Nation's revenue projection is expected to drop significantly to \$132 million due to the closure of the Navajo Generating Station and Kayenta Mine."*³⁵

Per this statement, the closure of NGS and Kayenta Mine will reduce the Navajo annual budget by 23% (\$40 million) for fiscal year 2020.

³² From the report "Regional Economic Assessment & Strategy for the Coal-Impacted Four Corners Region," prepared for the Northwest New Mexico Council of Governments, February 2017.

http://www.nwnmcog.com/uploads/1/2/8/7/12873976/final_highland_economics_report_2017.pdf

³³ As quoted in the Albuquerque Journal, August 20, 2018.

³⁴ NBC News. Lighting the West, Dividing a Tribe. Dec. 18, 2018.

<https://www.nbcnews.com/specials/navajo-coal>

³⁵ Official Facebook of the Nez-Lizer Administration. May 14, 2019.

<https://www.facebook.com/1717870175145185/posts/2215709062027958?s=100002256817013&v=i&sfns=mo>

The impacts will be even more severe for the Hopi, who rely on mining royalties for about 85% of its annual budget.³⁶ (NGS does not occupy Hopi land, so the tribe does not receive any lease revenue from the plant.)

In terms of employment, NGS operator Salt River Project (SRP) has put into place a redeployment program that has guaranteed jobs to any employee who wants to stay with the company, although that could entail relocation. As of September, nearly 300 of the workers at NGS had accepted redeployment offers at other SRP facilities. Another 75 chose retirement. And for those who opt to remain on the Navajo Nation, SRP notes that the decommissioning contractor could hire as many as 80 local people to assist with plant retirement efforts.³⁷

Peabody Energy, however, has offered no updates on its workforce, redeployment, job retraining or opportunities for employment in mine reclamation activities. The full workforce at Kayenta Mine was laid off in phases, with the last workers let go in August.³⁸

Q. How do you expect these economic declines to be felt on the Navajo Nation?

A. Economically, the Navajo Nation has always fared poorly compared with the general populations in both Arizona and New Mexico. Prosperity was supposed to be a key part of the promise of NGS and the other power plants built on or near tribal land. FCPP, SJGS, NGS, and their respective mines have indeed brought good-paying jobs to the isolated areas directly around them. The jobs and benefits provided to the many workers who who've built lives and supported families should not be discounted. In the same vein, though, it would be a disservice not to recognize that the rewards promised to the Navajo and Hopi have never materialized. By nearly every demographic measure, the Navajo are worse off than others in the Southwest. As the chart below shows, the Navajo have substantially lower median household incomes, suffer higher unemployment and poverty rates, are forced to rely on government services for

³⁶ Institute for Energy Economics and Financial Analysis. "As Coal Economy Collapses, Imminent Public Budget Crisis Confronts Hopi-Navajo Tribes." May 2019.

http://ieefa.org/wp-content/uploads/2019/05/Imminent-Public-Budget-Crisis-Confronts-Hopi-Navajo-Tribes-With-Coal-Economy-Collapse_May-2019.pdf

³⁷ NGS plant manager Joe Frazier, in the Navajo-Hopi Observer. "Decommissioning of Navajo Generating Station process begins - here's what to expect." Oct. 1, 2019.

<https://www.nhnews.com/news/2019/oct/01/column-decommissioning-navajo-generating-station-p/>

³⁸ Cronkite News. "Kayenta Mine layoffs hit, as Navajo Generating Station closure looms." Aug. 23, 2019.

<https://cronkitenews.azpbs.org/2019/08/23/kayenta-mine-layoffs-hit-as-navajo-generating-station-closure-looms/>

their well-being in great numbers, or, as in the case of health insurance, to go without —and all by substantial margins.³⁹

	Arizona	New Mexico	Navajo Nation
Median Household Income	\$56,581	\$46,744	\$26,693
Unemployment Rate	5.8%	6.6%	16.1%
% of Families Below Poverty	10.7%	15.2%	33.2%
% of Households Receiving Food Stamp Benefits	10.8%	17.4%	31.2%
% of Population Lacking Health Insurance	10.1%	9.1%	22.1%

The loss of hundreds of jobs that pay 4-5 times the media income, combined with a higher-than-normal percentage of people relying on government services and the expected decrease in Navajo government revenue and services, all add up to consequences that could be felt deeply. As one Navajo chapter official noted:

*“The coal mine and the power plant have allowed our community to be self-sufficient for many years. If they close, it will have a devastating impact on us and the surrounding communities... [G]iven the tribe’s huge dependence on coal, a lot more assistance may be needed in coming years. We’re one of the most impacted chapters on the Navajo Nation.”*⁴⁰

– Lucinda Bennalley, Vice President of Nenahnezad Chapter, near SJGS

Of course, as Bennalley notes, additional services will be needed, along with job training and resources for communities to plan for a post-coal future, all of which can and should be supported by transition funding as recommended by the Citizen Groups.

IV. The Impacts of FCPP and SJGS on Tribal Communities and Jobs

Q. How have recent power plant retirements impacted employment in the region?

- A. As noted in Mike Eisenfeld’s testimony, FCPP retired three of the five generating units six years ago; and the neighboring SJGS closed two of its four units in late 2017. These retirement decisions have caused significant job losses in the region, as shown in the table below.⁴¹

³⁹ Data from the U.S. Census Bureau’s American FactFinder, 2017.

<https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>

⁴⁰ Quoted in the Albuquerque Journal, August 20, 2018.

⁴¹ Ibid.

**Table 2-3: Reduced Generation and Employment:
NW New Mexico Coal-Fired Power Generation Plants**

Power Plant	Peak Generation Capacity			Reduced Generation Capacity		Change in Jobs	Change in Labor Income (including Benefits), Millions 2016\$
	Generation Capacity (MW)	Jobs	Jobs /MW	Generation Capacity (MW)	Jobs		
San Juan Generating Plant	1,683	~400	0.24	847	~200 ¹	-200	-\$30.0
Four Corners Generating Plant	2,104	~500	0.24	819	~350 ²	-150	-\$22.5
Escalante Generating Station	247	~120	0.49	247	~120	0	
Total	4,034	~1,020	0.25	1,913	~670	-350	-\$52.5

Note: Totals may not sum due to rounding.

1/Estimated assuming that the jobs per MW of generation capacity remains constant.

2/Based on Evans, James, and Madley (2013) study of Four Corners Generating Plant employment and income for units 1, 2, and 3.

Tables above and below from the report, "Regional Economic Assessment & Strategy for the Coal-Impacted Four Corners Region," prepared for the Northwest New Mexico Council of Governments, February 2017.

Similar impacts resulted from the mining cutbacks that came with the retirement of the FCPP and SJGS units, as shown in the chart below. While there is no data specific to the impacts on Navajo workers, it's logical to assume that about half of the \$66 million in lost wages tied to SGJS and the San Juan Mine, and 80% of the \$44.1 million in losses from FCPP, would have fallen on tribal workers. This conservatively adds up to at least \$68.3 million in lost Navajo income.

**Table 2-4: Reduced Generation and Employment:
NW New Mexico Coal Mines**

Coal Mine	Peak Production			Reduced Production		Change in Jobs	Change in Labor Income (including Benefits), Millions 2016\$
	Annual Production ¹ (1,000 tons)	Jobs	Jobs/ 1,000 Tons	Annual Production (1,000 tons)	Jobs		
San Juan Mine	6,000	500	0.08	~3,000	~250	-250	-\$30.0
Navajo Mine	7,200	500	0.04	~4,800	320	-180	-\$21.6

- Q. What are the anticipated impacts to employment, income, and the local and regional tax base if coal-fired power generation continues to decline?**
- A. The 2017 analysis conducted for the Northwest New Mexico Council of Governments estimates the following impacts in the region as coal-fired power

generation continues to decline;⁴²

- The loss of 940 direct jobs and \$122.1 million in annual income, a drop of approximately 1-2% of the region's employment and income base. Approximately 85% of this impact will be felt in San Juan County.
- The loss of 2,260 to 3,180 indirect jobs and \$195.2 to \$213.3 million in annual income in other economic sectors. Approximately 90% of this impact will be felt in San Juan County.
- The loss of \$43.3 million in annual tax receipts across local, tribal and state government. Thirty-four percent of this revenue loss will impact the state of New Mexico, 56% will impact the Navajo Nation, and 10% will impact local governments in Northwest New Mexico.

Q. How do you expect these economic declines to be felt on the Navajo Nation?

- A. Any economic impacts from the closure of SJGS and further ramping down of the FCPP's operations and its eventual closure will only be magnified on the Navajo Nation.

With a third of Navajo households living below the poverty line and on food stamps, median income at roughly half of what it is for the general population in both Arizona and New Mexico, Navajo unemployment double the rate in Arizona and New Mexico, and one out of every five Navajo lacking health insurance, the expected loss of jobs from the closure of SJGS and FCPP will result in even greater economic dislocation on the Navajo Nation than in the surrounding non-tribal areas.

IV. Ensuring a Just Transition for Communities Economically Dependent on Coal

Q. Do you support the testimony of Citizen Groups witness Mike Eisenfeld on the planning and implementation of a just transition of NGS, SJGS, and FCPP?

- A. Yes, I do.

⁴² "Regional Economic Assessment & Strategy for the Coal-Impacted Four Corners Region," prepared for the Northwest New Mexico Council of Governments, February 2017.

Q. Is there anything that you would like to add about the timing and scope of just transition efforts?

A. Yes. Planning for a just transition must begin now. It cannot be approached in an ad hoc manner, especially given the jurisdictional complexities of FCPP, SJGS and NGS, and the diversity of stakeholders and communities that will be impacted by the imminent closure of two of the plants and eventual closure of the third, likely far sooner than anticipated. Just transition planning will require a systematic approach and must involve diverse interests – both tribal and non-tribal. Financial resources to support the engagement of these stakeholders and begin attracting new businesses to the region is essential.

Q. Does a just transition effort align with the Fundamental Law of the Diné?

A. Yes it does. The Fundamental Law of the Diné (Diné Bi Beenahaz'áanii),⁴³ approved by the Navajo Nation Council in 2002, articulates the foundation of all Navajo life and government, presenting proper and acceptable ways for human beings to sustain themselves and their communities.

The Fundamental Law governs natural resource development and use, including coal mining and combustion and their impacts on climate change, water, health and socioeconomics. Relevant sections of the Fundamental Law to this proceeding include the following:

- The sacred elements of life, air, light/fire, water and earth/pollen in all their forms must be respected, honored, and protected, for they sustain life.
- The Diné have a sacred obligation and duty to respect, preserve and protect all that was provided for. We were designated as the steward of these relatives through our use of the sacred gifts of language and thinking.
- The rights and freedoms of the people to the use of the sacred elements of life ... and to the use of the land, natural resources, sacred sites, and other living beings must be accomplished through the proper protocol of respect and offering, and these practices must be protected and preserved for they are the foundation of our spiritual ceremonies and the Diné life way.
- It is the duty and responsibility of the Diné to protect and preserve the beauty of the natural world for future generations.

The Citizen Groups' recommendations to ensure a "just transition" as part of this proceeding align with these principles of Navajo Fundamental Law. As a partner with the Navajo Nation through land leases at FCPP and NGS, and a tenant on

⁴³ <http://www.navajocourts.org/dine.htm>

Navajo land, and as an employer of at least a thousand Navajo workers at those two plants and SJGS combined, TEP should accord deference to Diné Fundamental Law in its decision-making and support the Citizen Groups' recommendations in this proceeding.

V. Five Recommendations to Ensure a Just Transition as Part of This Proceeding

Q. Do you support the five recommendations for a just transition described by Citizen Groups witness Mike Eisenfeld?

A. Yes, I do.

Q. What are those five recommendations?

A. The recommendations are:

1. TEP should establish two separate Transition Funds to provide financial resources to the communities impacted by the closure of the SGJS, FCPP, and NGS. Specifically, TEP should commit at least \$21 million to support a just transition fund for Four Corners region; and at least \$8 million to support a just transition fund for the communities impacted by the closure of NGS..
2. TEP should provide financial support to help establish and implement two separate transition collaboratives that it also participates in: (1) A Four Corners Transition Collaborative comprised of stakeholders from northwestern New Mexico, and (2) A NGS Transition Collaborative comprised of stakeholders from the Navajo Nation, the Hopi Tribe, and the City of Page, Arizona.
3. TEP should support tribal communities through commitments to providing transmission capabilities and renewable energy development opportunities on Tribal Lands, including through working with the Navajo to facilitate Tribally-owned and operated projects.
4. TEP should develop and deploy energy efficiency programs to benefit both Tribal and Non-Tribal communities and work cooperatively with the other owners of FCPP, NGS, and SJGS to ensure coordinated, comprehensive energy efficiency offerings and delivery.
5. TEP should provide in-kind and regular assistance to the Navajo Nation to aid in economic development efforts through the development of electric infrastructure that serves Tribal communities.

Q. Is there anything about Citizen Groups Recommendation #1 that you would like to add?

A. Yes. Based on the magnified economic impacts that will be experienced on the Navajo Nation by the closure of these plants, a percentage of both transition funds should be earmarked specifically for the benefit of tribal communities.

Q. Is there anything about Citizen Groups Recommendation #2 that you would like to add?

A. Yes. Navajo interests including, but not limited to, governance at the chapter, agency and tribal levels, labor representation, and community advocacy organizations must be given an opportunity to participate in both transition collaboratives. We further recommend that both a tribal and a non-tribal neutral convener be selected to lead the Collaborative.

VI. Conclusion

Q. Does this conclude your testimony?

A. Yes.